

said magnetic bearing is actively controlled in five active axes.

6. A combination mechanical and magnetic support system as described in claim 1 wherein:

said wire metal mesh is constructed from wires with diameter less than 0.100 inches.

7. A wire metal mesh as described in claim 6 wherein:
said wires of the mesh are knitted to form said mesh.

8. A wire metal mesh as described in claim 6 wherein:
said wires of the mesh are woven to form said mesh.

9. A combination mechanical and magnetic support system as described in claim 1 wherein:

said spring damper can withstand radial loading over 10,000 lbs without plastic deformation.

10. A combination mechanical and magnetic support system as described in claim 1 wherein:

said rolling element bearings are lubricated using a dry lubricant.

11. A combination mechanical and magnetic support system as described in claim 1 wherein:

said rolling element bearings include preloaded tandem pair angular contact ball bearing sets.

12. A combination mechanical and magnetic support system as described in claim 11 wherein:

said bearing sets use ceramic balls with metal races.

1. A combination mechanical and magnetic support system for a flywheel power supply for storing and retrieving energy in which said power supply includes a flywheel that spins about an axis of rotation inside an evacuated chamber, an attached motor/generator means is provided for accelerating and decelerating said flywheel, said combination mechanical and magnetic support for said flywheel comprising:

at least one rolling element bearing and at least one magnetic bearing in bearing housings mounted in said chamber providing radial and axial support for said flywheel in said chamber;

wire metal mesh spring dampers between portions of said rolling element bearings and said bearing housings, said spring dampers imparting both radial damping and radial centering stiffness to said flywheel;

said support system having a radial stiffness that allows a cylindrical rigid body resonance of said flywheel to occur at a speed less 30% of the normal operating speed;

said magnetic bearings supporting at least than 80% of the weight of said flywheel and thereby substantially extending the life the of said rolling element bearings.

2. A combination mechanical and magnetic support system as described in claim 1 wherein:

said rolling element bearing is continuously in contact with said flywheel.

3. A combination mechanical and magnetic support system as defined in claim 2 wherein:

said magnetic bearing uses rare earth magnets to provide lifting force.

4. A combination mechanical and magnetic support system as described in claim 1 wherein:

said rolling element bearings function as auxiliary bearings that contact said flywheel only when the radial displacement of said flywheel is excessive.

5. A combination mechanical and magnetic support system as described in claim 4 wherein: